

# Prevalence of Signs and Symptoms of Temporomandibular Joint Disorders among Saudi Population - A Cross-sectional Study

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## Abstract

**Background:** This cross-sectional study evaluated the prevalence of the signs and symptoms of temporomandibular joint (TMJ) disorder (TMD) among Saudi patients with TMD symptoms.

**Methods:** A total of 300 patients were screened; and of which 243 patients, 116 were males and 127 were females, with the age group of 15–30 years and above, who were randomly picked from the different school and colleges and also patients visiting the college of dentistry, King Khalid University, Abha, Saudi Arabia. A detailed questionnaire was distributed among the subjects asking about the presence of TMJ pain and related habits. The data obtained were compiled and statistically analyzed using Statistical Package for the Social Sciences software version 16.0. The *P* value was analyzed using the Pearson Chi-square test.

**Results:** About 20 patients (7 male and 13 female, i.e., 8.23%) had pain in TMJ or related or facial region, with a *P* = 0.0015 which is statistically significant.

**Conclusion:** Females with age group above 30 years had TMD signs and symptoms more frequently than males in the study population. The most common problem in both genders was pain.

**Key words:** Chewing habit, Headache, Pain

## INTRODUCTION

Temporomandibular joint (TMJ) disorders (TMD) are one of the common conditions which affect the orofacial region. The American Dental Association in 1983 has suggested a broader term TMD refers to a group of disorders characterized by pain in TMJ, the periauricular area, or the muscles of mastication based on various risk factors [1]. In the past few years, the risk factors underlying the etiology of TMJ is subject of debate. [2,3] In general, the risk factors such as parafunctional habits, emotional stress,

genetic and psychosocial factors, age, and gender have gained an important role in the etiology of TMD. [4,5] The most common signs are noises during opening and closing of mandible and deviation or restriction in mandibular range of motion. Most common symptom of TMD is pain during mandibular movements, at rest, or on palpation of the muscles. Pain results from the changes in muscle activity that limits the movements of the mandible and protects it from further damage while trying to promote healing. [6] TMD can also occur as a consequence of pain of non-dental origin in the orofacial region, including the head, face, and related structures. TMD is a possible cause of headache and vice versa as a positive correlation was found between TMD and the prevalence of headaches. [7] The prevalence of TMD varies from 9.8 to 80% from published data, according to epidemiological studies in different population age group based on risk factors. Few studies have been reported on the prevalence of TMD in

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Saudi Arabia in normal children, during the primary, mixed, and permanent dentition population group.<sup>[8-10]</sup> Other Saudi reports were on signs and symptoms of TMD in a specific patient and non-patient subjects such as military students, female patients seeking orthodontic treatment, and dental students.<sup>[11]</sup> The prevalence of TMD is still not well known, and more studies and comparisons are necessary to allow better understanding of the pathological aspects so as to address effective preventive and therapeutic measures. The aim of this questionnaire study is to assess the common predisposing or risk factors for TMJ pain in Saudi population.

## MATERIALS AND METHODOLOGY

The present study followed a cross-sectional design. Ethical clearance was obtained from the Institutional Review Board (SRC ETH/2012-13/022). The study sample consists of 300 subjects, Saudi nationals (both male and female) who were randomly picked from the different school and colleges and also patients visiting the College of Dentistry, King Khalid University, Abha, Saudi Arabia. A detailed questionnaire was distributed among the subjects asking about the presence of TMJ pain and related habits. All the subjects were informed regarding the purpose of the study, and written consent was obtained from participants. The subject sample that did not complete the questionnaire was excluded from the study. The final sample size was 243 (116 males and 127 females).

## DATA AND STATISTICAL ANALYSIS

Data were collected by questionnaire and were entered into a spreadsheet (Excel 2000; Microsoft, US) and analyzed subsequently using Statistical Package for the Social Sciences version 16.0. The *P* value was analyzed using the Pearson Chi-square test.

## RESULTS

A total of 243 subjects were questioned regarding the presence of TMJ pain, and about 20 patients (7 male and 13 female [8.23%]) had pain in TMJ or related or facial region, with *P* = 0.0015 which is statistically significant. In age group between 15 and 30 years, 5 females and 7 males were suffering from the TMJ pain. In age group above 30 years, no males had TMJ problem, but eight females had pain [Table 1].

Of 243 subjects, about 40% had regular headache from time to time, and among them, male subjects in the age group of 15–30 years had higher prevalence followed by

female subjects. About 11.5% of patients had TMJ noise (clicking) while opening or closing the mouth, whereas 7.7% of patients had pain on the wide opening of the mouth. Moreover, 10% of the population were suffering from arthritis, 5.5% had a previous history of blow to the jaws, 6.8% had pain while chewing food, while 13% of the patients expressed pain while eating a big meal. Rest of the subjects, i.e., 10.7% felt pain in the jaw joint when they visited the dentist [Table 2].

Regarding the habits as recorded by the questionnaire, about 26% had chewing on one side, of which males of 15–30 years had higher prevalence making about 46.6%. Moreover, 41% of the subjects had a habit of using chewing gum more than an hour per day, of which female students had a higher incidence of 69%, whereas 23% of subjects had the habit of biting their nails, of which female population was more (25%). The prevalence of biting some article like pen or pencil with their teeth was 28%. A large number of samples about 52% of subjects had the habit of supporting their hand on TMJ area while relaxing or watching television. Bruxism accounted for 4% and stress biting for 3.4% [Table 3].

## DISCUSSION

Risk factors are pathophysiologic, psychological, or structural processes that alter the masticatory system sufficiently to increase the risk of development of TMD.<sup>[12,13]</sup> “We have been taught that pain is a symptom and the way to relieve a symptom is to remove the cause. If no somatic cause can be found, we may give up and abandon the patient else we may hypothesize a cause and treat it, either conservatively or less conservatively. If the treatment fails, we may try something else or tell the patient to learn to live with the pain.”

The present study examined 243 subjects by questionnaire consisting of risk factors, out of which 20 subjects, both

**Table 1: Age group**

Age	Sample	TMJ complaint (%)
15–30	Males - 78	7 (8.9)
	Female - 106	5 (4.7)
30 and above	Male - 38	0
	Females - 21	8 (38.9)

TMJ: Temporomandibular joint

## Chi-square tests

	Value	df	Asymptotic significant (two-sided) (P value)
Pearson Chi-square	9.88 (a)	6	0.003

**Table 2: TMJ symptoms**

S. No.	Symptoms	Males		Females		Total (%)
		15-30 (a)	30 ab (b)	15-30 (a)	30 ab (b)	
1	Head ache	46	4	38	5	93 (40)
2	Rheumatoid arthritis	18	2	2	1	23 (10)
3	Accident or a blow on the jaw	11	0	2	0	13 (5.5)
4	Clicking	18	3	3	3	27 (11.5)
5	Pain on opening mouth widely	10	2	5	1	18 (7.7)
6	Pain when chewing	4	5	2	5	16 (6.8)
7	Feel pain while eating a big meal	12	4	12	3	31 (13)
8	Pain in the jaw joint when you visit the dentist	10	4	8	3	25 (10.7)

TMJ: Temporomandibular joint

**Chi-square tests**

	Value	df	Asymptotic significant (two-sided)
Pearson Chi-square	13.518 (a)	9	0.141

**Table 3: Habits**

S. No.	Habits	Males		Females		Total (%)
		15-30 year (a)	30 ab (b)	15-30 (a)	30 ab (b)	
1	Chewing on one side	26	10	18	7	61 (26)
2	Bruxism	3	1	5	1	10 (4)
3	Use of chewing gum	23	2	65	4	94 (41)
4	Nail biting	25	4	18	6	53 (23)
5	Biting articles	33	2	27	4	66 (28)
6	Jaw enforcement	49	3	65	6	123 (52)
7	Stress biting	3	1	3	1	8 (3.4)

**Chi-square tests**

	Value	df	Asymptotic significant (two-sided)
Pearson Chi-square	8.735 (a)	9	0.462 (non-significant)

male and female, had the complaint of pain in TMJ or orofacial region, broken down by age and by gender. 14.5% of the subjects experienced pain in periauricular region which were in contrary to the previous study.<sup>[14]</sup>

Headache is one of the common symptoms seen with TMD. In the present study, 40% of the subjects experienced headache. The younger age groups had higher prevalence rate compared to older age group. 40% of male and female subjects in the age group of 15-30 years had higher when compared to above 30 years of age. This was at higher rate when compared to previous studies.<sup>[15]</sup> The prevalence of TMJ pain in younger age group is due to parafunctional habits such as chewing on one side and jaw enforcement, and the results were correlating with previous studies and possible causative mechanism for head ache, namely, TMD and TMD-induced sensitization in the central and peripheral nervous systems.<sup>[16]</sup> Clicking while opening and closing of the mouth was prevalent in 11.5% of population where the higher prevalent group was males under 30 years of age, with 66% which was contrary to the

study conducted on adults in West Bothnia.<sup>[17]</sup> A history of rheumatoid arthritis was found in 10% of population, but a strange finding was more number of sufferers who were below 30 years' male, and this may not be clinical finding instead it was a questionnaire which sample group might have mistaken for other pain. 13% of population had pain in temporomandibular area after a big meal where both males and females under 30 years had similar prevalence rate. 10% of population had pain after long dentist appointments. Questionnaire on the personal habits we found that 52% of population (123 out of 243) had a habit of placing their palm on TMJ area and supporting on elbow while relaxing or watching television. 41% of population, 94 patients, had a habit of chewing gums for longer period affecting the masticatory system. Female below 30 years were more compared to other groups. 28% of population had a habit of biting articles such as pen and pencil, which was more common among males below 30 years of age. In a study conducted in Jeddah, Saudi Arabia, the prevalence of parafunctional habits like nail biting was 41%. 26% of population had a habit of chewing

on one side of the jaw which had led to unilateral pain on temporomandibular areas in this group. A common habit of biting nail or trimming the nail with the teeth was found in 23% of population. Other habits such as bruxism and stress biting or psychological stress lead to bit the upper and lower teeth which were found in few patients about 4% and 3.4% of population, respectively.<sup>[18]</sup>

## SUMMARY AND CONCLUSION

The prevalence of TMD among Saudi population in Asir region Abha females were comparatively more affected than the males. Females with age group above 30 years were found to have more prevalence when compared to 15–30 years age group. Common symptoms in these patients were headache, pain after a big meal, clicking of joints, and pain in the preauricular area after prolonged dentist appointment. To some extent, these patients also had symptoms like pain on opening wide and chewing. The most common etiological factors for TMD in descending order were found to be pressure on TMJ while relaxing or watching television, use of chewing gum for longer period, biting articles such as pen or pencil, unilateral chewing, nail biting, bruxism, and psychological stress for lesser extent.

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